

SYMPOSIUM ON  
WOMEN IN BIOMEDICAL CAREERS: DYNAMICS OF CHANGE  
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Keynote Address

I begin with some personal reminiscences.

Bright and early one morning in the mid-1960's, the telephone rang in my lab. It was the Executive Secretary of an NIH Study Section. Would I, the person wanted to know, become a member of a biochemistry Study Section? I chuckled, and said no thank you, you haven't wanted me or thought me qualified before, and as far as I knew nothing much had changed since yesterday afternoon except that President Lyndon Johnson has decreed that all federal government advisory committees would, henceforth, have a substantial number of female members. I'd been getting along quite well without all that additional work and might just as well stick to the lab.

How I wish that I had continued to be so principled. But in the end, my ego, or the promise of influence, or the argument that it would be good for women scientists if they were represented on this or that committee, got to me and I succumbed and found myself accomplishing some interesting and important work for science but also wasting many hours..

Many of you can tell similar stories. We have, by-and-large, been at least as serious members of many important committees as have our male colleagues. Often, we have served on even more committees and boards than our average male colleagues, because given our small numbers and the mandated requirements for representation by women, we are needed, or so it is said. Some of us have served on too many such bodies, giving up a great deal of time that could otherwise have been spent in the lab, or the clinic, or with our families, or walking on a beach.

One of the most interesting opportunities I had, at least in part because women were needed, was to serve on the board of trustees of a major private research university. Indeed, it was a stimulating and worthwhile 15 years. But it had a discouraging aspect. Each year, the university administration reported to the board extensive analyses of the results of affirmative action policies for faculty hiring and promotion. The administration took this challenge seriously; I have no doubt of that. They worked hard with search committees trying to effect change, but progress seemed to be barely perceptible when it came to tenured faculty. And the explanations for the

discouraging state of affairs were never totally satisfactory, not for want of commitment, but because the explanations remained complex or obscure.

About five years ago, a distinguished colleague and friend at another major research university headed a search committee charged with recommending appointment of several senior scientists in several biomedical fields. He sent the usual letters out all over the country, and they contained the usual sentence about being especially interested in nominees who were women...a sentence he truly meant. And he had the usual response; no women were nominated. So he sent another letter, somewhat less formal. "Look guys", he said (or something like this) "I really mean this. Search your brains and your souls and tell me about the terrific female graduate students you've trained and what they're doing now". Did it work? No. So finally, he went searching himself, and of course he identified smashing women candidates and even managed to attract several of them to his institution.

Some 25 years after President Johnson's directive, in 1990, I was completing a term on what is widely believed to be an influential and important policy committee of especially distinguished members of the National Academy of Sciences representing a variety of fields of research. The committee members were discussing possible replacements for those about to rotate off the group. Physicists suggested physicists, biochemists suggested biochemists, and so forth. They turned to me and said that with my

departure, the committee would be without a female member, and would I please offer some ideas for women who might be appointed. I should have done my bit, recommended names, tried to assure opportunities for women on this committee. But I was frustrated. So I pointed out that people carrying two X chromosomes did not constitute a particular branch of science and I thought that they would know the women in their own fields better than I would, so why didn't **they** come up with the names. It was, I said, their responsibility, not mine, to be sure that women were part of the committee.

Why am I telling you all this? You've all had similar experiences and could tell many similar stories. The point is that a great deal of progress has been made, and the opportunities for women in research are substantially improved compared to 25 years ago. Just two days ago the New York Times' Science Times (Tuesday, June 9, 1992) featured a story about telomeres and their possible role in maintaining viable cells and perhaps even their association with the phenomenon of aging and with the vigorous growth of tumor cells. The new work, as well as much of the earlier work on telomeres is correctly credited, and all the major contributors have been women, starting with Barbara McClintock's studies on chromosome stability, right thru the recent work of Elizabeth Blackburn and Carol Greider.

Yet, we have to face up to the fact that affirmative action, no matter how laudable it is (and I think it is) has worked at a snail's

pace. Many women have been trained in science in the last 25 years, and many of them are superb, accomplished scientists. Still, so few have reached the professorial ranks, and so many are still discouraged. You've no doubt read the recent Science Magazine issue on women in science. The situation is still so dismal that they actually characterized Chemistry as a field that was middling on the issue of opportunities for women, somewhere between neurobiology which was painted as being pretty good, and mathematics, which was deemed to be the pits. How many Chemistry Departments do you know of where women abound and feel as though they belong?

Now, we can wait around for a while longer in the hope that progress will slowly continue and that eventually, affirmative action will really work. In the meanwhile, a lot of money that could be used for good science will be spent on studies trying to figure out why affirmative action hasn't worked or hasn't worked more rapidly, why young female scientists disappear somewhere between their Ph.D. or M.D. degrees and the assistant professor positions. Ultimately, all the 'old school' men who still call us 'honey' will age sufficiently to retire and maybe, just maybe, the younger men will be different. But it seems to me that waiting around is insufficient. Current strategies have an important flaw. No matter how hard we may work to have them succeed, they depend finally on **other** people, mainly men, changing their attitudes and expectations. In that same issue of Science, there is a telling quote from Shirley Tilghman, Professor of Molecular Biology at Princeton. At a Gordon Conference she organized in 1988, fully 33% of the speakers were

women; two years later, at another on the same subject, organized by men, there were two women speakers.

With due respect to all of you and to the organizers of this conference, the conference agenda illustrates my point. It speaks to approaches that require others to change. Here are a few examples taken from the titles this meeting's sessions. Recruitment, retention, and re-entry imply getting the current research institution hierarchies to be responsible for the advancement of women. The workplace climate that is mentioned is a climate set by the current faculties. Who is abusing the power in the workplace? Men who are in charge. Who is expected to become sympathetic to non-traditional pathways? Men who are in charge. Who is doing the harrassing? Men who are in charge. How will effective connections be made between the best of networks and the places where decisions are being made? Networks can provide sympathetic ears, but they can't easily provide a lab of ones own. Keeping ones sanity is not the same as keeping ones lab. And who really wants to be part of the "old boys' network?

What is needed is a strategy that depends on us. A strategy that assumes we will expend our energies on improving the opportunity for women to do science, not on complaining about the failure of others to do so.

We have to stop expecting that our male colleagues will change, particularly the leaders among them, those who are the best

scientists. The fact is, many of them are, understandably and appropriately, much more concerned about their own research than about the status of women. Their ambitions make them less than collegial. And, as Dr. Healy was recently quoted as saying:

"If collegiality is the measure by which we evaluate good scientists, we might as well shut down right now". Quotation credited to Bernadine Healy in *Nature*, 357, p. 4 (made in reference to Gallo Report.)

Similarly, we need to face the reality of our colleagues' as well as our own ambitions, and recognize that we are not about to change theirs. Indeed, ambition and competition are most often constructive elements in accomplishing good science. Wallace Stegner puts it very well in his novel "Crossing to Safety": the male protagonist thinks to himself: "Unconsidered, merely indulged, ambition becomes a vice; it can turn a man into a machine that knows nothing but how to run. Considered, it can be something else-pathway to the stars, maybe". We cannot expect that our male colleagues will or should, in our interests, become more collegial or less ambitious or less competitive. So, it is not only unlikely that we could succeed in having them change to meet our needs, but it is also probably not desirable from the point of view of science.

There is another flaw in our current strategies. They address the world as it is, not as it will be. Yet, we want to succeed for the future, the present is, after all, almost past. Our energies should go

into making sure that the future gets shaped to foster women's contributions to science.

The three essential elements in a new strategy then are: First, that we strive to do the best science that we can: the most original, the most rigorous, the most interesting. Second, we need to depend on ourselves and not on others to enable our contributions to science, and thus to human welfare. Third. we need to make certain that we, ourselves, have a substantial say in the shape the future.

What kinds of elements should go into a new strategy? We can gather some clues from our male colleagues who have, in the past 40 years, built an extraordinarily successful research enterprise in our country: by success, I mean that they have enormously enhanced our understanding of the natural world and the ability to use that knowledge for the benefit of the inhabitants of our planet....the **ability**, not necessarily the will to use the knowledge in that way, that is a separate discussion for another day. Our male colleagues, like the scientists concerned with telomeres I mentioned before, have chosen avenues of inquiry that opened new fields, and expanded even our very sense of what the questions are. And we should emulate that, but with our own agenda. In so doing, we will move from the periphery, from being supplicants for fair treatment to being the shapers of the future.

I'll try to be more specific. In one example, pertinent for those, like yourselves, who are concerned with biomedical research, Dr.



Healy's new emphasis on research into matters that effect women's health has opened a door. There are additional indications that this will be an expanding field. The Institute of Medicine's annual symposium this coming October is entitled "Gender Differences in Health". There is now a Society for the Advancement of Women's Health Research, there is even a new journal, to begin publication this spring, called The Journal of Women's Health. Past experience tells us that with each new focus for biomedical research, new questions and new understandings about the fundamental properties of living things have emerged. Recall that each of the NIH's institutes (but one) is named for one or more diseases. The research sponsored by these institutes focuses on the diagnosis and treatment of the relevant diseases and also on related fundamental research. The fundamental research has had profound implications for our understanding not only of the sponsoring institute's main concern, but also for other diseases as well, and for our understanding of nature. The same will be true of the new program on women's health.

Consider, for example,. the phenomenon of menopause. What fundamental aspects of living things will be revealed when we understand this profound change? What will the implications be for understanding aging in general?

Another important focus for research on women's health is contraception. Research in this area is currently practically at a standstill in our country. The findings of the 1991 Women's Health

Research Roundtables, published by the Society for the Advancement of Women's Health Research reminds us that "Adolescents in the United States become sexually active at about the same age as teens in Canada and Sweden and at the same rate, but the U.S. leads the industrialized world in teen pregnancies. Clearly, (the findings go on to say) more choices among effective contraceptives are desperately needed. Many Americans past their teens would also welcome improved methods. And work in this area is likely to produce substantial fundamental understanding of the processes of ovulation, oocyte and sperm maturation, and fertilization. A successful effort might also yield innovative routes out of a political issue that is tearing our country apart: access to abortion. Our male colleagues have not insisted that contraception be on the active research agenda; but we should be strongly motivated.

This area of research is important for yet another reason: the increasing world-wide concern for the environment. These weeks we are especially aware of this issue because of the Rio conference. We all decry the extinction of uncounted, even unknown species. We need to face the fact that the unchecked expansion of our own species is a root cause of the loss of biological diversity. The recent joint statement by the officers of the Royal Society of London and the U.S. National Academy of Sciences entitled "Population Growth, Resource Consumption, and a Sustainable World" asks "what are the relevant topics to which scientific research can make mitigating contributions?" The first topic listed as an answer to this question is "development of new generations of safe, easy to use, and effective

contraceptive agents and devices" And Congressman George E. Brown, Jr., a great friend of science and chairman of the House of Representatives Committee on Science, Space and Technology wrote recently in the Chronicle of Higher Education (April 22, 1992):

"Many scientists, historians, and policy makers believe that population growth represents the fundamental challenge to humanity's capacity to achieve long-term environmental, economic, and cultural stability". "Exponential growth of population triggers exponential growth in consumption of resources, in generation of waste products, in conflict and violence, and in disparities in economic status and quality of life".

The agenda I am proposing for those concerned with research in the field of women's health will not be easy to achieve. There are powerful political forces in our country which would prefer to forget that the ramifications of sex are central to all our lives. At least in part, such views reflect a deep denial of women and women's legitimate rights and interests. Menopause embarrasses them. Contraception not only embarrasses but gravely troubles some of them. Indeed, there are indications that if the anti-abortion forces succeed in turning back the clock by overturning *Roe v. Wade*, as well they may, they will then actively pursue an anti-contraception agenda. But sound biomedical research in these areas will increasingly bring such matters into the open, will legitimize them, will make it more and more difficult to ignore the associated societal and cultural realities. One day, we may even see the federal

government willing to fund scholarly studies of teen's attitudes to sex and contraception, and willing to replace the chapter on contraception that was deleted this spring from the government's book called "Taking Care of Your Child", a book distributed to federal employees to give advice on child rearing, deleted because it was believed to be offensive.

There are other roadblocks in the way of this agenda as well. In the negotiations about the agreements to be made in Rio, the Group of 77 developing nations deleted references to the urgency of slowing population growth. This found support from feminist health groups from the developed countries. As Jessica Tuchman Mathews pointed out in a recent column in the Washington Post, "Feminist health groups, along with some women's groups in developing countries and representatives of minority women in the U.S., have long been antagonistic to population control because they believe it jeopardizes women's health, is disguised genocide, or places blame on women". Here again, sound science, the careful establishment of facts about life on the planet, the biology of individuals and of ecosystems, will make it increasingly difficult to ignore the realities.

I believe that a sound scientific agenda, based on vital issues of concern to women is one way to promote the role and status of women scientists. Here again, the Program for Research on Women's Health is an example. It sets aside monies to support research. Those whose proposals are excellent enough to be funded will have something special to offer research institutions at a time when new

money is very attractive indeed. We need not applaud the importance of grant potential in recruitment, but it is a fact of life and advantage can be taken. Moreover, it is very likely that several more women will be elected to State legislatures and the Congress this fall. There are 150 women candidates for the House of Representatives, nationwide, more than twice the number in 1990. R.W. Apple, Jr., writing in the New York Times (May 24, 1992) suggests that five new women may be elected to the Senate, which now has two women, and that there could be 20 new women in the House, which now has 29. Just as our male leaders have, in the past, cultivated the interest of senators and representatives in biomedical research to extraordinarily good effect, women scientists too can cultivate the interest of women in Congress to assure the stability and growth of the program for Research on Women's Health.

The availability of these grants and the excellent science they will support will not only contribute to the ability of women to capture faculty positions, they will also strengthen bargaining positions during recruitment negotiations. A few years ago, Carl Djerassi wrote a letter to Science Magazine suggesting that extra help for child care should be considered comparable to the mortgage support that is used as a recruitment device in academic institutions. I have been wondering whether, in families where one spouse's benefits provide for a family's health insurance, the other spouse might not be offered child care support instead. There are many possibilities to think about. The important thing is seize the opportunities that are being offered and to use them to define new

scientific agendas that have the potential for major contributions to knowledge and societal problems. From this can come a vitality that cannot be ignored, and that will place women at the center of the research enterprise.